

**GIANT MAGNETORESISTIVE SENSOR HAVING SELF-
CONSISTENT DEMAGNETIZATION FIELDS**

ABSTRACT OF THE DISCLOSURE

5

The present invention is directed to a spin valve sensor for use in a data storage system, that is adapted to receive a sense current and produce a GMR effect in response to applied magnetic fields. The spin valve sensor includes first and second ferromagnetic free layers, a 10 spacer layer positioned between the first and second ferromagnetic free layers, and a biasing component. The first ferromagnetic free layer has a magnetization (M_1) in a first direction, when in a quiescent (non-biased) state. The second ferromagnetic free layer has a magnetization (M_2) in a second direction that is anti-parallel to the first direction, when in a 15 quiescent (non biased) state.

20

DRAFTED AND DRAFTING STAMP